6.2.6 Comparability

Comparability is the qualitative term that expresses the confidence that two data sets can contribute to common interpretation and analysis and is used to describe how well samples within a data set, as well as two independent data sets, are interchangeable. Comparability was addressed by a data usability review comparing the results of field observations and laboratory analyses. Data were found to be comparable across data sets.

7.0 CONCLUSION

This Phase II investigation has characterized and delineated asbestos, hazardous waste, and LBP contamination at the ESBF property, along with confirming the presence of SVOCs in soils and TAL metals in groundwater that exceed health risk benchmarks (Appendix B).

1. LBP was identified on 4 interior surfaces of the office building out of the 30 surfaces analyzed. The *in situ* XRF analysis performed on these samples indicated that the lead content was greater than 1 mg/cm^2; therefore, the results of this investigation indicate the building materials identified in Table 7 need to be handled as LBP if a renovation takes place in the office (HUD 2005).

2. Asbestos was identified in 69 samples at concentrations of greater than 1 percent in the ESBF main building, warehouse, and office. Asbestos was also identified in 30 debris pile areas and 4 surface soil areas outside the buildings on the rest of the ESBF property at concentrations of trace. Friable materials are materials that, when dry, can be crumbled, pulverized, or reduced to powder with hand pressure. The significance of friability is important because friable materials become airborne more readily and are, therefore, a greater health concern. Friable ACMs were identified throughout the ESBF main building and office along with areas outside the buildings in debris pile areas on the ESBF property. Therefore, the results of this investigation indicate the building materials and soils identified in Tables 13 and 14 and Figure 4 need to be handled as ACM and ACS. The ACS and ACM outside the buildings on the ESBF property exceed CDPHE thresholds for asbestos concentrations and may present a health hazard for anybody who comes into direct contact with these areas and materials without proper PPE. The presence of friable ACMs outside the fenced area around the ESBF is also of significant concern and may require action based on CDPHE spill response requirements (Figure 4).

3. Fifty-nine containers were characterized by a START chemist during the April 5 through April 12, 2010 field sampling event. These containers will need to be disposed of appropriately by a certified waste disposal facility.

4. Five out of the 28 soil samples had elevated levels of SVOCs above the EPA RSLs for industrial soils. The ESBF property has not been securely managed over the years, and illegal trash dumping and other illegal uses have taken place, which could account for the SVOC contamination. Possible remediation and/or further assessment decisions should be based on the anticipated use of these specific areas and the significance of the contamination identified.

5. All 28 soil samples collected exceeded the EPA RSL for industrial soils for arsenic. However, arsenic levels ranged between 2.8 to 10.7 mg/kg, which are within the range of background levels observed in northeastern Colorado and are, therefore, likely naturally occurring and not indicative of environmental concern.

6. None of the water samples analyzed were above the MCL for VOCs, SVOCs, or pesticides. All six of the groundwater samples contained concentrations of lead, ranging from 26.9 to119 ppb, which are above the MCL for drinking water. Five of the groundwater samples contained concentrations of arsenic, ranging from 10 to 25.9 ppb, which are above the MCL for drinking water. The beryllium concentrations for three of the water samples were above the MCL for drinking water, ranging from 4.1 to 4.6 ppb. Currently the groundwater on the property is not being used for any purpose. If the ESBF property's groundwater is ever used as a drinking water source, it may present a risk to human health without proper treatment.

8.0 CLEANUP ACTION RECOMENDATIONS

Based on the findings of this Phase II report, disposal options for asbestos, LBP, and hazardous waste on the ESBF property have been researched and are summarized in the following sections (Tables 10, 11, 12). These preliminary cost estimates were tabulated using quantified values from both 2010 START field sampling events in conjunction with the 2010 RSMeans Building Construction Cost Data manual and the RSMeans Environmental Remediation Estimating Methods 2nd Edition (RS Means 2010). Preliminary cost estimates for asbestos abatement and hazardous waste container disposal from local abatement and disposal contractors are located in Appendix C. Basic cost and volume estimates have been incorporated where appropriate, but should be used only to guide decision-making.

8.1 HAZARDOUS WASTE CONTAINER DISPOSAL

Fifty-nine containers were found on the ESBF property that contained hazardous and non-hazardous contents. Twenty-five of these containers were HazClassed by a START chemist and organized into U.S. Department of Transportation hazard class waste streams. The other 24 containers that appeared to have the same contents based on material appearance, container appearance, or container label were grouped together and one sample was collected to represent the grouping. HazClass samples were not collected from the two factory sealed drums discovered on the property. Disposal of the 59 containers will need to be completed by a waste disposal facility working under a Part B permit for management of RCRA-regulated hazardous waste. Disposal prices of the containers can vary dependent upon disposal method and upon profiling and/or waste verification of the containers at the time of receipt by the contracted waste disposal facility. Two preliminary cost estimate scenarios were completed for disposal of the 59 containers identified at the ESBF property (Table 10). The first cost estimate scenario is based on a best-case scenario, if waste profiling of the 32 "DOT 3 flammable/combustible" fuel oil drums shows the drums contain less than 5 percent chlorinated halogens and if the two corrosive solvent drums can be disposed of by wastewater treatment. The second cost estimate scenario is based on a worst-case scenario, if waste profiling the 32 "DOT 3 flammable/combustible" fuel oil drums shows the drums contain greater than 5 percent chlorinated halogens and if the two corrosive solvent drums have to be disposed of by incineration. The cost of disposal for scenario one is $20,247.60. The cost of disposal for scenario two is $27,210.60 (Table 10). Contractor cost estimates for disposal of the 59 containers HazClassed by START at the ESBF property can be found in Appendix C.

8.2 ASBESTOS ABATEMENT

Four hundred and twenty-seven construction material and surface soil samples were collected at the ESBF property and analyzed for asbestos by PLM analysis, of which 103 tested positive for asbestos. Approximately 138,000 sq ft of ACM was characterized and identified in the main building, warehouse, and office at the ESBF property. A total of 5,000 cubic yards of ACM/ACS was delineated and identified on the ESBF property on the exterior of the buildings.

One preliminary cost estimate was researched and completed for this recognized environmental hazard, as abatement is the only cleanup option available. Cost for abatement of the ACM inside all three buildings on the property and ACM debris and ACS on the exterior of the ESBF

property is $1,827,691.00 (Table 11). Contractor cost estimates for abatement of only the ACM in the buildings of the property ranged from $942,709.75 to $1,890,000 (Appendix C).

8.3 LEAD REMOVAL AND MANAGEMENT-IN-PLACE FOR THE OFFICE

LBP was identified at concentrations greater than 1 mg/cm^2 on walls, window casing, and floors in the office building (Table 7). It is important to note that only one reading was taken from each room for each baseboards, window frames, window sashes, doors, and door frames. In the office building, one reading identified a window frame as containing LBP at greater than 1 mg/cm^2 and, therefore, all of the windows in the room (the entire second floor) were assumed to contain LBP.

Proper management and/or disposal may be required for materials containing greater than 1 mg/cm^2 at the office building (CDPHE undated). LBP in the building may present a significant danger to the health of workers participating in demolition or renovation activities. Airborne lead concentrations detected in excess of 30 micrograms per cubic meter ($\mu g/m^3$) will subject employers to Occupational Safety and Health Administration (OSHA) regulations regarding working in an environment containing LBP (OSHA 2009).

LBP was identified on walls in the basement room at the bottom of the stairs, referred to as room 1. LBP on walls can be encapsulated and left in place, which will require routine maintenance under an Operations and Maintenance plan to ensure it remains encapsulated and does not become exposed. LBP was identified on window frames and floorboards on the second floor, referred to as room 8. When left in place, windows and floorboards can either be stripped of lead paint using a chemical process or have the LBP encapsulated by repainting. Removing LBP from windows and floorboards is preferred over encapsulation with new paint because moving and friction on these surfaces is more likely to cause the paint to be worn and exposed. Alternatively, windows and floorboards can be removed and replaced.

A basic cost estimate has been compiled using an estimate of 10 LBP-containing windows, 800 sq ft of LBP-containing walls, and 500 sq ft of LBP-containing floorboards. After removal is complete, the waste must be tested by Toxicity Characteristic Leaching Procedure (TCLP) to determine if it must be disposed of as RCRA hazardous waste in a micro-encapsulation landfill or as construction debris in the county landfill (Safety Safety-Kleen 2010). The cost to remove, haul, and dispose of the LBP and conduct TCLP testing is approximately $9,334 to $11,300 (Table 12) This value was calculated using the 2010 RSMeans Building Construction Costs Data Guide and

disposal estimates from the Grand Junction Safety-Kleen office (RSMeans 2010, Safety-Kleen 2010). The cost for removing LBP from windows includes all of the related parts, such as window casings and window sashes. The estimate was calculated under the assumption that the waste would be determined hazardous by a TCLP test.

The cost for removal and replacement of the windows and floorboards was not calculated because it is highly variable based on the materials selected to replace the removed items. If the grantee chooses to remove and replace windows, baseboards, and doors, a TCLP test of the debris would be required before disposal.

Additional quotes from local contractors should be obtained to determine a more accurate cost.

TABLE 12
Preliminary Cost Estimate for Lead-Based Paint Abatement

Task type	Unit	Task code	Qty	Price	Costs	Notes
Mobilization, equip towed by pickup	ea	01 54 36.50 1100	3	$70.00	$210	
Encapsulation on walls	sq ft	02 83 19.23 0220	800	$1.35	$1,080.00	
Removal, by chemicals on windows	ea	02 83 19.26 6280	10	$272.00	$2,720	
Removal, by chemicals on floors*	sq ft	02 83 19.26 4800	500	$6.10	$3,050	
55 gallon drum to contain waste	ea		2	$75.00	$150	
TCLP test on paint waste	ea		2	$200.00	$400	
Disposal, 55 gallon drum	ea		2	$569.50	$1,139	hazardous waste code D008
Demobilization	ea	01 54 36.50 1100	3	$70.00	$210	
Permitting	job	01 41 26.50 0100		0.01	$375	
Total					$9,334	
Contingency			20%		$1,866.80	
Total Estimated Costs including contingency					$11,200.80	

* * used cost estimate for siding – RSMeans does not provide costs for floors.
ea each
sq ft square feet

TABLE 10
Preliminary Cost Estimate for Disposal of Containers

COST ESTIMATE SCENARIO 1		
I. Treatment & Disposal		**Total Cost**
Containers: EBHZ01, EBHZ02, EBHZ03, EBHZ04, EBHZ05, EBHZ06 for Incineration	6 x $264.00 DM55	$1,584.00
Container: EBHZ08 for Waste Water Treatment	1x $130.00 DF55	$130.00
Container: EBHZ07 for Waste Water Treatment	1x $50.00 DF05	$50.00
Containers: EBHZ09, EBHZ18, EBHZ21, EBHZ22, EBHZ23 Lab Pack for Fuels Blending	1 x $175.00 CF55	$175.00
Containers: EBHZ10, EBHZ11, EBHZ12, EBHZ13, EBHZ16, EBHZ17, EBHZ20 for Incineration (1801bs minimum)	2275 x $0.60 Lb.	$1,365.00
Containers: EBHZ14, EBIZ19, Factory Sealed Drum 01 for Incineration	3x $264.00 DM55	$792.00
Container: EBHZ15 for Treatment	1 x $219.00 DM55	$219.00
Containers: EBHZ24, EBHZ25s' Lab Pack for Incineration	1 x $285.00 CF55	$285.00
Fuel Oil for Fuels Blending ->5000BTUllbs, <1/3rd container sludge, <5% halogens	32 x $60.00 DM55	$1,920.00
Liquid Perchlorate for Treatment	1 x $517.00/ OM55	$517.00
II, Materials & Supplies		
Labpacker, (55 gallon)	2x $30.00 Each	$60.00
Absorbent Bags, (Vermiculite)	2x $19.00 Each	$38.00
Drum, Metal, (85 gallon. overpack), New, Open Top (if needed)	50 x $157.50 Each	$7,875.00
III. Labor		
Environmental Technician, Straight Time, hourly rate	3x $55.00 Hour	$165.00
IV. Transportation		
Transportation	19 x $35.00 Each	$665.00
V. Profile Administration		
Energy & Insurance Fee	8076 x $0.10/ %	$807.60
Handling, (Overpack handling fee, if needed)	50x $72.00 Each	$3,600.00
VI. Total Estimate		
		$20,247.60

Note: DISPOSAL PRICE is based upon disposal method; therefore, the disposal price estimated above may differ from the final disposal price, which will be determined upon profiling and/or upon waste verification at time of waste receipt. All pricing is based on straight time.

TABLE 10, continued
Purpose: Preliminary Cost Estimate for Disposal of Containers

COST ESTIMATE SCENARIO 2		
I. Treatment & Disposal		**Total Cost**
Containers: EBHZ01, EBHZ02, EBHZ03, EBHZ04, EBHZ05, EBHZ06 for Incineration	6 x $264.00 DM55	$1,584.00
Container: EBHZ07 for Incineration	1 x $135.00 DM05	$135.00
Container: EBHZ08 for Incineration	1 x $480.00 DM55	$480.00
Containers: EBHZ09, EBHZ18, EBHZ21, EBHZ22, EBHZ23 Lab Pack for Fuels Blending	1 x $175.00 CF55	$175.00
Containers: EBHZ10, EBHZ11, EBHZ12, EBHZ13, EBHZ16, EBHZ17, EBHZ20 for Incineration (1801bs minimum)	2275 x $0.60 Lb.	$1,365.00
Containers: EBHZ14, EBIZ19, Factory Sealed Drum 01 for Incineration	3x $264.00 DM55	$792.00
Container: EBHZ15 for Treatment	1 x $219.00 DM55	$219.00
Containers: EBHZ24, EBHZ2s' Lab Pack for Incineration	1 x $285.00 CF55	$285.00
Fuel Oil for incineration ->5000BTUllbs, <1/3rd container sludge, >5% halogens	32 x $264.00 DM55	$8,448.00
Liquid Perchlorate for Treatment	1 x $517.00/ OM55	$517.00
II. Materials & Supplies		
Labpacker, (55 gallon)	2x $30.00 Each	$60.00
Absorbent Bags, (Vermiculite)	2x $19.00 Each	$38.00
Drum, Metal, (85 gallon. overpack), New, Open Top (if needed)	50x $157.50 Each	$7,875.00
III. Labor		
Environmental Technician, Straight Time, hourly rate	3x $55.00 Hour	$165.00
IV. Transportation		
Transportation	19 x $35.00 Each	$665.00
V. Profile Administration		
Energy & Insurance Fee	8076 x $0.10/ %	$807.60
Handling, (Overpack handling fee, if needed)	50x $72.00 Each	$3,600.00
VI. Total Estimate		
		$27,210.60

Note: DISPOSAL PRICE is based upon disposal method; therefore, the disposal price estimated above may differ from the final disposal price, which will be determined upon profiling and/or upon waste verification at time of waste receipt. All pricing is based on straight time.

TABLE 11
Preliminary Cost Estimate for Asbestos Abatement

Task Type	Unit	Task code	Qty	Price	Costs
Pre-cleaning/Non-Asbestos Debris Removal	sq ft	02 82 13.42 0100	84,055	0.4	$33,622
Containment, each layer, 6-mil	sq ft	02 82 13.42 0560	4,400	0.82	$3,608
Decon and staging area, 1000 sq ft	sq ft	02 82 13 42 0400	1,000	6.95	$6,950
Neg Air Machine and Setup	ea	02 82 13 42 0900/6500	24	1022	$24,528
Removal, pipe insulation	ln ft	02 82 13 43 1100	2,673	15.6	$41,699
Removal, Boiler	sq ft	02 82 13 43 0200	8,718	9.95	$86,744
Removal, Cementitious Flat Materials	sq ft	02 82 13 42 3000	1,800	2.64	$4,752
Removal, Collect Bulk Debris – Friable	3 cu ft	02 82 13 47 0100	13,375	13.85	$185,244
Removal, VAT	sq ft	02 82 13 42 5000	6,202	1.98	$12,280
Removal, Cement Asbestos Transite Board	sq ft	02 82 13 43 8000	5,985	1.28	$7,661
Removal, Bulk Debris and Soil from Property	cu yd	31 23 16 42 0200	5,000	2.28	$11,400
Removal, Asbestos Millboard	sq ft	02 82 13 43 8300	900	1.22	$1,098
Removal, Irregular Sprayed surface insulation	sq ft	02 82 13 43 3100	18	3.96	$71
Removal, Shingle Roofing	sq ft	02 82 13 43 8200	26,948	1.23	$33,146
Removal, Ducts	sq ft	02 82 13 43 0400	4,500	5.4	$24,300
Removal, Cleaning of existing equipment prior to disposal	sq ft	02 82 13 42 0100	223,200	0.4	$89,280
Testing, Cleaned area,	ea	02 82 13 45 1110	200	146	$29,200
Testing, Personnel, 100 days, 10 samples per day	ea	02 82 13 45 0200	1,000	13	$13,000
Testing, Area, 100 days, 10 samples per day	ea	02 82 13 45 1100	1,000	13	$13,000
Load out	ea (3 cu ft)	02 82 13.47 0100	6,500	13.85	$90,025
Disposal	cu yd	02 82 13.47 5000	6,500	121	$786,500
Job subtotal					**$1,498,108**
Contingency (This is a percentage of the total job.)	job		1	0.2	$299,622
Permitting (This is a percentage of the total job.)	job	01 41 26.50 0100		0.02	$29,962
Total Estimated Costs					**$1,827,691**

Estimate does not include mobilization/demobilization costs, as these costs are dependant upon contractor specific distances to the site, and number of crew per unit equipment and task. Estimate does not include administration and contractor reporting. Estimate does not include standard oversight contractor costs.

Assumes a bulk debris depth of 6 in

Average pipe diameters of 8 in (0.67 ft) used to calculate volume of pipe.

ea each cu ft cubic feet cu yd cubic yard ln ft linear feet sq ft square feet

Attachment A
Environmental Restoration LLC
Cost Estimate

Site Name: Great Western Sugar

Date: March 02 2011
Contract #: EP-W-07-052
Job Task #:
Job #: TBD

Labor:

Name	Description	Quantity	STRAIGHT TIME Hours	Rate	Amount	OVERTIME Hours	Rate	Amount	Total Amount
	RM II	1	2,000.0	64.10	$128,200.00		64.10	$0.00	$128,200.00
	PAS	1	1,280.0	33.93	$43,430.40	600.0	50.90	$30,540.00	$73,970.40
	Foreman	2	1,280.0	50.90	$130,304.00	600.0	76.37	$91,644.00	$221,948.00
	Laborers (DBA)	13	1,280.0	59.68	$993,075.20	600.0	73.87	$576,186.00	$1,569,261.20
	Truck Driver	5	160.0	42.41	$33,928.00	80.0	55.27	$22,108.00	$56,036.00
	Operators	6	800.0	52.57	$252,336.00	400.0	70.50	$169,200.00	$421,536.00
							"A" Total		$ 2,470,951.60

Equipment

Equipment No.	Description	Quantity	Duration	Unit	Cost / Unit	Subtotal Costs	Total Amount
	4x4 Pick-up Truck	7	192.0	days	103.77	139,466.88	$ 139,466.88
	Water Truck	2	100.0	days	241.98	48,396.00	$ 48,396.00
	Decontamination trailers	1	192.0	days	63.00	12,096.00	$ 12,096.00
	Hurricane Vac	1	40.0	days	241.98	9,679.20	$ 9,679.20
					"B" Total		$ 209,638.08

Other Direct Costs

	Quantity	Unit / Duration	Cost / Unit	Costs	G&A	Total Amount
Fuel - Non Clin	96.00	days	850.00	81,600.00	5,304.00	$ 86,904.00
Tandem Dump Trucks	9.00	mo	3,500.00	31,500.00	2,047.50	$ 33,547.50
Excavators 100Klb	10.00	mo	12,000.00	120,000.00	7,800.00	$ 127,800.00
Excavator Long Reach 65'	3.00	mo	14,000.00	42,000.00	2,730.00	$ 44,730.00
Skid Steer	8.00	mo	1,400.00	11,200.00	728.00	$ 11,928.00
Manlifts - 85'	7.00	mo	16,000.00	112,000.00	7,280.00	$ 119,280.00
Water Truck	8.00	mo	6,000.00	48,000.00	3,120.00	$ 51,120.00
Crane Service	60.00	hrs	400.00	24,000.00	1,560.00	$ 25,560.00
Trailers - office/crew/supply	8.00	mo	600.00	4,800.00	312.00	$ 5,112.00
Lodging	4800.00	nights	85.00	408,000.00	26,520.00	$ 434,520.00
per diem	4800.00	days	46.00	220,800.00	14,352.00	$ 235,152.00
Industrial Vacuum	3.00	mo	12,000.00	36,000.00	2,340.00	$ 38,340.00
Neg Air Units - 5000cfm	24.00	mo	1,400.00	33,600.00	2,184.00	$ 35,784.00
Disposal - Friable	20000.00	tons	21.00	420,000.00		$ 420,000.00
Disposal - non Friable	1000.00	tons	18.00	18,000.00		$ 18,000.00
Disposal - Drums, oils, etc	80.00	ea	200.00	16,000.00		$ 16,000.00
Waste Transportation	3300.00	hours	100.00	330,000.00		$ 330,000.00
Scrap Steel Credit	1.00	ls	-200,000.00	(200,000.00)		$ (200,000.00)
Water	1.00	ls	16,000.00	16,000.00	1,040.00	$ 17,040.00
Scaffolding	1.00	ls	50,000.00	50,000.00	3,250.00	$ 53,250.00
Miscellaneous Supplies and Services (Utilities, trash, lumber, poly, PPE,	1.00	Lump Sum	130,000.00	130,000.00	8,450.00	$ 138,450.00
				"C" Total		$ 2,042,517.50

Assumptions

Wages DBA for laborers paid as Abatement workers; contract rate applies for others
Main building demo'd and sent offsite as friable, no other buildings demo'd
Soils can be disposed on site in coal pit
Steel can be scrapped
PPE, poly, etc will be reimbursed

"A"	Total	$ 2,470,951.60
"B"	Total	$ 209,638.08
"C"	Total	$ 2,042,517.50
Total Estimated Cost		**$ 4,723,107.18**